



Walls with tongued - and - grooved tiles and metal structure, for multiple uses such as flooring, walls, fences, steps.

Background of the invention

Currently walls are built of bricks, cement, rods, hydrated limestone, gravel sand and also out of mud, wood and foliage which originates adobe; this is good but earthquakes or seisms sometimes do knock them down, due to their excessive weight, and the rigidity of their structure.

Wooden houses made out of boards, slats, and wood in general are liable to be damaged by flames.

Houses made of wood and cement and dry walls or rock-slabs, have a wooden framework which, in turn is formed on the outside with cardboard, chicken - wire plus a cement plaster, the latter being a 1 ½ inch thick cover and the paint, are also a flexible - type of house but liable to damage by flames because they do contain wood inside the walls, this cement lining on the walls is called stucco and it is not enough to protect in case of fire, so the problem remains.

All these problems together give this type of construction a high degree of lack of safety due to the fact that in the event of a quake or in summers with high temperatures, these houses become liable to suffer damage from flames and also, quakes do progressively crack the stucco, mud and loosen the woodwork, so that in the event of a strong seism the houses become quite unsafe and liable to be knocked down, causing many deaths as has occurred throughout times. Due to this phenomenon, some cities in the world even have been relocated, like the old

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Guatemala, due to the fact there is no better method and design in the market than traditional construction, which, as stated before, makes them extremely heavy (a three – bedroom house weighs 60 tons or more, according to its size).

Purpose of the invention

This invention consists in providing the user with the maximum possible assurance that the construction will not be knocked down by a quake, and that it will not either become prey of flames due to the fact it shall not contain flammable materials such as wood or foliage.

The purpose of this construction is

- A. To remove the maximum percentage of weight of the construction and to provide the maximum strength to the materials used, for them to last longer.
- B. Improve the manner constructions are made, in order to save labor costs in the construction. By way of example: walls and flooring.
- C. It is intended that through the utilization of cement tiles everything can be assembled, thus reducing construction times when compared with traditional construction.

Description of the invention

The details and characteristics of this novel combination of tiles and structure are shown quite clearly in the following description and the drawings that illustrate it.

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Figure 1: Front view of the cement tile.

Figure 2: Is the conventional perspective of the cement tile, showing inside it, chicken wire (No. 7) which is taut around it, by means of a frame made out of thin corrugated rod (No. 5), which has various extensions (No. 8) that are welded to the outside to the metal plates (No. 2). Around the cement slab is the tongued - and - grooved, with male tongues (No. 3) and female grooves (No. 4).

The cement tile (No. 1) is comprised by a mixture of: sand, gravel, cement and tezonite (porous construction rock).

Figure 3: Is a profile view of the cement tile.

Figure 4: Is the metal pillar seen in perspective, the pillar has a metal plate (No. 9) in the lower portion of the pillar that has 4 openings (No. 12), above the plate there is a 4 - vertically welded - angle structure (No. 10), which is placed around slanting angles (No. 11) welded to the vertical angles (No. 10), the metal pillar has empty spaces inside (No. 25).

Figure 5: Is the top view of the metal pillar.

Figure 6: Is a profile view of the metal pillar and shows.

Figure 7: Is the perspective view, which for this description shall be called metal pole, that has in its lower portion a metal plate (No. 13) said plate has 4 openings (No. 15), above the metal plate there is a metal pipe (No. 14) welded to the metal plate.

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Figure 8: Is the profile view of the metal pole.

Figure 9: Is the top view of the metal pole.

Figure 10: Is the perspective of a metal pipe (tubular) which, for the purpose of this description shall be called crosspiece.

Figure 11: Is the perspective view of the metal angle.

Method to use cement tiles

For this description, below we provide an example explaining the method a cement tile can be used, in this case we shall explain its use on a wall.

In order to use the cement tile, a metal structure must be made previously, on which can be fitted the cement tiles. For this purpose, at figure 12, is shown a structure comprised by foundations (No. 17) above which are located the metal pillars (No. 18) and the metal poles (No. 19), in between the metal pillars and the metal poles are the crosspieces (No. 20), all of the above do form a structure adequate for the cement tile (No. 21).

Figure 13 shows how the cement tiles (No. 21) would be fitted in the metal structure, the joint between the metal structure and the cement tile is made through angles (No. 22) that can be welded or bolted according to the need.

Figure 14 is a close up in perspective of two cement tiles (No. 21) showing how is made the joint between the two tiles, it shows the tongue – and – groove of the tiles, showing the male tongues (No. 3) and the female grooves (No. 4).

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Figure 15 shows in profile, how is made the joint of two cement tiles.

Figure 16 shows in profile the joint of two cement plates.

Figure 17 shows in perspective the metal structure with the cement tiles, and also a metal lattice (No. 23).

At figure 18 is shown in perspective, the metal structure with the cement tiles, and also a metal lattice (No. 23), the metal lattice serves to fit the rock-slab on it (24).

At figure 19 is shown a close – up of the wall in profile, showing that the metal pillar has spaces (No. 25).

Figure 20 shows everything shown at figure 19 with the difference of the empty space (No. 25) that serves for housing (No. 26) piping for: water and power.

The design of walls with tongued – and - grooved walls and metal structure inside makes it stronger and consistent and, by having less weight, its framework has more flexibility and the life of its structure is longer, better fit for all sorts of weather.

The metal structure provides the wall with flexibility and strength in the event of a quake or seism, which most of constructions are not capable of withstanding, because in traditional construction walls are too heavy, rigid and vulnerable to the vibration of a quake, they have no flexibility and tend to crack or collapse completely.

The tiles can be manufactured in various sizes, textures and colors.

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This type of wall allows for leaving an empty or hollow space along the wall, to be used to fit plumbing piping, power wiring, the pipes that serve as ventilation shafts for drainage, and subsequently to be filled with insulating materials such as fiberglass and other sheathing.

This type of wall also allows for the same model of tile, which is used for the outer walls, which are used as lining, or wall, to be also used as flooring at any level.

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